



13. What effect did Michigan's requirement that renewable energy be built in a defined geographic area have? What job growth is attributable to that requirement? What cost, reliability, and environmental impacts are attributable?

The requirement that renewable energy generation facilities be located in Michigan or the service territory of a Michigan utility to satisfy Michigan's renewable portfolio standard was an important element of 2008 PA 295. The act begins with the following language (MCL 460.1001):

"Section 1.

- (1) This act shall be known and may be cited as the "clean, renewable, and efficient energy act".
- (2) The purpose of this act is to promote the development of clean energy, renewable energy, and energy optimization through the implementation of a clean, renewable, and energy efficient standard that will cost-effectively do all of the following:
 - (a) Diversify the resources used to reliably meet the energy needs of consumers in this state.
 - (b) Provide greater energy security through the use of indigenous energy resources available within the state.
 - (c) Encourage private investment in renewable energy and energy efficiency.
 - (d) Provide improved air quality and other benefits to energy consumers and citizens of this state."

The geographical requirement (MCL 460.1029) is primarily that

" Sec. 29.

- (1) Subject to subsection (2), a renewable energy system that is the source of renewable energy credits used to satisfy the renewable energy standards shall be either located outside of this state in the retail electric customer service territory of any provider that is not an alternative electric supplier or located anywhere in this state. For the purposes of this subsection, a retail electric customer service territory shall be considered to be the territory recognized by the commission on January 1, 2008 and any expansion of retail electric customer service territory recognized by the commission after January 1, 2008 under 1939 PA 3, MCL 460.1 to 460.10cc. The commission may also expand a service territory for the purposes of this subsection if a lack of transmission lines limits the ability to obtain sufficient renewable energy from renewable energy systems that meet the location requirement of this subsection."

This basic requirement is followed by certain exceptions that meet the spirit of this requirement but address special circumstances. This geographic requirement was not primarily intended to concentrate resulting economic activity in Michigan, but to have the renewable generation occur within the "balancing areas" of Michigan's electrical grid.

Renewable generation outside of Michigan's "balancing areas" would deliver power into the electrical grid in the location in which the renewable generator is located. If the location was not in the North American electric power grid or is at great remove from Michigan, then it is clear that the only purpose of the act served would be "(c) Encourage private investment in renewable energy and energy efficiency". Diversifying energy resources to reliably meet energy needs of consumers in Michigan, providing energy security through use of indigenous resources, and improving air quality in Michigan are accomplished only to the extent that the renewable generation is close enough to Michigan to displace combustion of imported fossil fuel in Michigan.

Michigan's electricity providers mostly operate within the rules of the wholesale power market operated by the Midwest Independent System Operator (MISO). The core of MISO's market making is that each load serving entity forecasts its load and every generating unit bids a price at which it will operate, then MISO schedules generation from lowest to most expensive generation to meet the forecast load, subject to transmission capacity. Most renewable generators operate near zero variable cost, so are always dispatched under the MISO rules. As a result, higher-cost fossil fuel plants are not operated to the extent that renewable generation is available. But, which fossil fuel plants will be operated less? A bit of careful modeling of the dispatch process shows that the effect is generally to reduce the operation of those fossil fuel plants that are closest (within the transmission grid) to the renewable generator and between the renewable generator and the load center toward which energy flows from the region of the renewable generator.

Most people who advocate that relaxing Michigan's locational requirement will allow cheaper renewable generation are comparing the cost of wind generation in Michigan to the cost of wind generation in the Northern Plains states. But, wind generation in the Northern Plains will not reduce fossil fuel generation in Michigan by any significant amount unless the wind generation in that region saturates the electricity loads of the Minnesota, Wisconsin, northern Illinois, and northern Indiana markets. Further, if those markets were saturated with wind generation from the Northern Plains, the residual flow of power past these markets would be divided between Michigan and areas to our southeast. The geographical area allowed to meet Michigan's Renewable Portfolio Standard approximates in definable territories the places in which the renewable generation will effectively compete with and displace Michigan-based fossil-fueled generation.

Finally, comparisons of the levelized cost of energy between locations are an inappropriate measure of the economic value of generation. Power is sold into the grid where it is generated and at the marginal price in that location at that time. Thus, the appropriate comparison is not the levelized cost of energy from a generator but the levelized cost of energy less the locational marginal price at the time of generation. Michigan has a persistently higher locational marginal price than do the Northern Plains states, averaging approximately \$20 per MWH more (see the MISO Market Monitor reports at <https://www.misoenergy.org/MarketsOperations/IndependentMarketMonitor/Pages/IndependentMarketMonitor.aspx>). This persistent difference in locational marginal price reflects precisely the limitations on transmission capacity and the intervening generation locations that would prevent renewable generation in the Northern Plains from displacing Michigan-based fossil-fueled generation.